AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) Microcolumn reactor for carrying out reactions on solid phases and/or biological cells comprising at least a first and a second substrate wafer being engaged to one another in a common plane, whereby at least one longitudinally extending channel is inserted into at least one of said substrate wafers, said channel, in a preselectable section of its length, being captured by two passage openings, which are passed through the opposite substrate wafer, ~~whereby filter elements are provided, and~~ wherein the passage openings are separated from the channel by a partially permeable sieve-like membrane, the membrane having transmission areas so dimensioned that they preselectably prevent micro-beads and/or cells, which are introduced into the channel, from entering into the passage openings, and the channel is provided with at least two further openings outside of the section captured by said passage openings, said at least two further openings being adapted to enable a loading and/or a displacement of the micro-beads and/or cells, provided above the section captured by said ~~passage~~ preselectable channel section, by applying a fluidic pressure, and further comprising means for

temporarily closing at least one of the passage openings and one of the further openings.

2. (Currently Amended) ~~A~~ The microcolumn reactor as claimed in claim 1, wherein glass is selected for the first substrate wafer and a silicon wafer for the second substrate wafer, whereby the channel is inserted into the glass plate and the surface of the silicon wafer opposing said glass plate is entirely covered by a coat, into which a micro-structurized perforation is provided at least in the section of the passage openings, said micro-structurized perforation being for forming transmission areas.

3. (Currently Amended) ~~A~~ The microcolumn reactor as claimed in claim 1, wherein at least one of a glass plate and a plate made of synthetic material is selected for the first and/or for the second substrate wafer, the channel is inserted into the first substrate wafer and the surface of the second substrate wafer opposing said first substrate wafer is entirely covered by a membrane, into which a micro-structurized perforation is provided at least in the section of the passage openings, said micro-structurized perforation being for forming transmission areas.

4. (Currently Amended) ~~A~~ The microcolumn reactor as claimed in claim 3, wherein the membrane is a perforated polymeric foil.

5. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim [[2]] 16, wherein the first and the second substrate ~~wafer are connected to one another by anodic bonding~~ wafers are anodically bonded to one another.

6. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim ~~2 or 3~~ 16, wherein the first and the second substrate ~~wafer are connected to one another by adhesives outside of the channel~~ wafers are attached to one another by an adhesive.

7. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim [[3]] 16, wherein the first and the second substrate ~~wafer are connected to one another by externally provided clamping means~~ wafers are attached to one another by external clamps.

8. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in claims 1, 2 or 3~~ according to claim 16, wherein ~~the passage openings~~ said first passages are connected to a ~~respective~~ ~~additional~~ second channel, ~~which is arranged~~ in ~~the plane of~~ the

second substrate wafer ~~and extends to a rim of the substrate~~ , with said second channel extending longitudinally at each of both ends thereof to respective opposite exterior surfaces of said second substrate wafer.

9. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in one of claims 1 to 5 and 7~~, according to claim 16, wherein ~~the channel is defined by~~ there is a plurality ~~of passage openings~~ , greater than two, of said second passages, and ~~respectively correlated passage openings~~, which ~~constitute an inlet and an outlet~~ are inlets, and ~~passage openings~~ a plurality, greater than two, of first passages, which ~~define a section of the channel~~ are outlets, ~~are~~ said plurality of first passages being arranged relative to one another one of equidistantly ~~or in variable~~ and at different distances along said channel, said plurality of second passages being arranged relative to one another one of equidistantly and at different distances along said channel, and said plurality of first passages and said plurality of second passages being correlatedly arranged relative to one another one of equidistantly and at different distances along said channel.

10. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim 9, wherein ~~a~~ said plurality of ~~the correlated passage openings~~ correlatedly arranged first and second passages are ~~provided~~ alternatively on a common substrate

wafer or fluidically connect a plurality of discrete microcolumn reactors ~~are fluidically interconnected~~, the respective distances ~~of~~ between correlated ~~passage openings~~ first and second passages, each pair of which together form one inlet and one outlet, being ~~formed, adapted to~~ of different length, as determined by requirements of an actual reaction process~~, of different length~~.

11. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim [[1]] 16, wherein a plurality of substrate wafers, ~~which have a respective said channel and respective said two passage openings each~~ each having a channel and at least two each of first and second passages therein, are ~~linearly and/or in a plurality of planes~~ fluidically interconnected with one another ~~as separate units each~~ in a manner selected from: in parallel in a single plane, serially in a plurality of planes, and in a matrix, combining both parallel, single plane and series, multi-plane interconnections, ~~and further components are provided at preselectable connection sites~~ with at least one analytical component selected from the group consisting of: optical detectors, chemical analysis units, calorimeters, and electrochemical detectors, being additionally connected to selected substrate wafers at predetermined connection points.

12. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim [[1]] 16, wherein a plurality of substrate wafers, ~~which have a respective said channel and respective said two passage openings each~~ each having a channel and at least two each of first and second passages therein, are ~~linearly and/or in a plurality of planes~~ fluidically interconnected with one another ~~as separate units each~~ in a manner selected from: in parallel in a single plane, serially in a plurality of planes, and in a matrix, combining both parallel, single plane and series, multi-plane interconnections, ~~and further micro-structurized components are provided integrated in the entire system~~ with at least one additional microstructured component being integrated with said substrate wafers.

13. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim [[2]] 16, wherein ~~the passage openings~~ said first passages in said first substrate wafer are~~, in parallel~~ positioned perpendicular to ~~the~~ an exterior surface ~~normal, formed by two channel sections in the shape of two truncated pyramids standing via their small base faces top-to-top one upon the other~~ of said first substrate wafer, which contains said first passages, said first passages each having an hourglass shape formed by two frusto-pyramidal sections, each with large and small base surfaces, said two frusto-pyramidal sections of each said first passage abutting one another and inverted upon one another at an intersection of their said small base faces, such that

an opening at one large base face is in communication with said channel in said substrate wafer, and an opening at said other, opposite large base face is at said exterior surface of said first substrate wafer, said second substrate wafer is an Si(100)-wafer ~~is used for the second substrate wafer which on both of its sides is provided with~~ having an etching mask on two opposite faces thereof, a first ~~masking face of which is provided with~~ etching mask on one face of said second substrate wafer having transmission areas at least across ~~the~~ said first passage openings, and ~~the~~ a second ~~masking face disposed on the opposing wafer face is~~ etching mask on an opposite face of said second substrate mask being provided with recesses~~, the~~ having openings ~~of~~ which correspond to ~~the~~ a smallest inside cross section of ~~the passage openings~~ said first passages, as measured at said abutting intersection of said small base faces of said two frusto-pyramidal shaped sections of said first passages.

14. (Currently Amended) ~~A~~The microcolumn reactor ~~as claimed in~~ according to claim 8, wherein ~~the~~ said second substrate wafer is one of a Si-wafer of 100-orientation ~~or~~ and 110-orientation, which ~~on one of its sides is provided with~~ has a sieve pore membrane mask structure on a side thereof, which, in ~~the~~ a vicinity of ~~the additional~~ said second channel ~~is accompanied by~~ further has a window corresponding to ~~the channel~~ a width of said second channel, ~~which extends~~ said window extending up to a rim of ~~the chip~~ said second substrate wafer, and ~~the~~

~~opposite~~ an opposite side of ~~the Si-wafer~~ said second substrate wafer is entirely covered by a protective ~~coat which is~~ etching resistant coating.

15. (Currently Amended) ~~A~~ The microcolumn reactor ~~as claimed in~~ according to claim [[1]] 16, wherein the membrane is a nano-porous, thin-layer membrane, ~~the~~ having pore sizes ~~of which are in a range~~ of 5 to 500 nm.

16. (New) Microcolumn reactor for carrying out at least one reaction selected from solid phase reactions and reactions on biological cells, comprising:

at least first and second substrate wafers, at least one of which is made from one of glass plate and silicon plate;

said first and second substrate wafers being engaged with one another over a common planar surface formed by intersecting a planar surface on each of said first and second substrate wafers;

at least one channel, in at least one of said first and second substrate wafers, said channel having a length extending longitudinally over at least a predetermined portion of a length of said substrate wafer, said channel for containing reactants, selected from micro-beads and cells, and conducting said reactants therethrough;

two first passages, passing through one of said substrate wafers, each said passage having an opening at opposite ends of said first passage, with an opening

at one end of each first passage being in communication with said channel, said first passages being at positions along a portion of said length of said channel, and spaced apart from one another by a predetermined first distance along said channel, and an opening at said opposite end of each said first passage being at and opening out from an outer surface of said substrate wafer;

filter elements, comprising two permeable sieve membranes, one in each passage at said opening therein that is in communication with said channel, said membranes having transmission areas dimensioned to screen at least one of micro-beads and cells, present in said channel, when a reaction is being carried out, and to prevent said micro-beads and/or cells from entering into said passages from said channel;

at least two second passages, in at least one substrate wafer, each said second passage having an opening at opposite ends of said second passage, with an opening at one end of each second passage being in communication with said channel, said second passages being at positions along a portion of said length of said channel, and spaced apart from one another by a predetermined second distance along said channel, such that said openings of said second passages in communication with said channel are linearly outside said positions of said openings of said first passages and said second distance along said channel between said second openings is greater than said first distance along said channel between

said first openings, with said openings of said first passages in communication with said channel and said openings of said second passages in communication with said channel being on opposite sides of said channel, and an opening at said opposite end of each said second passage being at and opening out from an outer surface of said substrate wafer, said second passages being for at least one of loading at least one of micro-beads and cells into said channel, and transporting said at least one of said micro-beads and said cells through said channel under fluid pressure;

closure devices for at least temporarily closing at least one of said first passages and said second passages; and

a perforated polymeric foil membrane, covering said entire surface of said second substrate wafer that engages with and forms a common planar surface with said first substrate wafer by intersecting a planar surface of said first substrate wafer, said perforated polymeric foil membrane having microstructured openings therein, at least in an area corresponding to said first passages, for enabling selective passage therethrough of material from said channel.